

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled).
2. (Currently Amended) A modular molecular clasp comprising: two single chain antibody domains together forming a molecular recognition element (MRE) comprising a ligand binding site; an effector; and a transducer linking conserved regions of the single chain antibody domains, wherein said modular molecular clasp is constructed such that allosteric alteration of said modular molecular clasp is facilitated in response to ligand binding to said molecular recognition element, producing a detectable change in an activity of said effector.
- 3-6. (Canceled)
7. (Currently Amended) The modular molecular clasp of ~~claim 1~~ claim 2, wherein the energy produced from ligand binding to said molecular recognition element is insufficient in itself to induce allosteric alteration of said molecular recognition element.
8. (Currently Amended) The modular molecular clasp of ~~claim 1~~ claim 2, wherein said transducer comprises a pair of polypeptides that form a noncovalently bound complex in response to ligand binding to said molecular recognition element.
9. (Canceled)
10. (Currently Amended) The modular molecular clasp of ~~any one of claims 8 or 9~~ claim 8, wherein said transducer comprises a pair of anti-parallel coils.
11. (Currently Amended) The modular molecular clasp of ~~any one of claims 8 or 9~~ claim 8, wherein said transducer comprises a pair of strands from a beta-hairpin structure.
12. (Currently Amended) The modular molecular clasp of ~~any one of claims 8 or 9~~ claim 8, wherein said transducer comprises an SH3 domain-peptide pair.

13. **(Currently Amended)** The modular molecular clasp of ~~any one of claims 8 or 9~~ claim 8, wherein said molecular recognition element comprises less than 50 amino acid residues.
14. **(Currently Amended)** The modular molecular clasp of ~~any one of claims 8 or 9~~ claim 8, wherein said molecular recognition element comprises less than 25 amino acid residues.
15. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein said molecular recognition element comprises two protein domains together forming a ligand binding site.
16. **(Currently Amended)** The modular molecular clasp of claim 15, wherein said molecular recognition element is selected from ~~the group consisting of~~ single chain antibodies (scFv), single chain T cell receptors ~~and~~ or single chain MHC molecules.
17. **(Original)** The modular molecular clasp of claim 15, wherein said molecular recognition element comprises a single chain antibody.
18. **(Currently Amended)** The modular molecular clasp of claim 15, wherein said molecular recognition element ~~is derived from a protein superfamily and~~ comprises a portion which is conserved among members of ~~said~~ a protein superfamily.
19. **(Original)** The modular molecular clasp of claim 18, wherein said transducer links said conserved portions within said molecular recognition element.
20. **(Original)** The modular molecular clasp of claim 15, wherein said transducer comprises less than 20 amino acid residues.
21. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein said molecular recognition element ~~is derived from a protein superfamily and~~ comprises a portion which is conserved among members of ~~said~~ a protein superfamily; and wherein said transducer binds to said conserved portion in the absence of ligand binding to said molecular recognition element but is displaced upon ligand binding to said molecular recognition element.

22. **(Original)** The modular molecular clasp of claim 21, wherein said transducer moiety comprises less than 20 amino acid residues.
23. **(Currently Amended)** The modular molecular clasp of ~~any one of claims 1, 2, 3, 4, 5, or 6~~ claim 2, wherein said transducer is operative with a plurality of distinct molecular recognition elements.
24. **(Currently Amended)** The modular molecular clasp of ~~any one of claims 1, 2, 3, 4, 5, or 6~~ claim 2, wherein said effector is operative with a plurality of distinct transducers and a plurality of distinct molecular recognition elements.
25. **(Currently Amended)** The modular molecular clasp of ~~any one of claims 1, 2, 3, 4, 5, or 6~~ claim 2, wherein said effector is selected from ~~the group consisting of~~ fluorophores, complementary enzyme fragments, inorganic nanoparticles, transcriptional activators, transcriptional repressors, radioactive molecules, radioactive molecular aggregates ~~and or~~ enzyme-peptide inhibitor complexes.
26. **(Currently Amended)** The modular molecular clasp of claim 25, wherein said fluorophore is selected from ~~the group consisting of~~ green fluorescent protein or fluorescent variants thereof ~~and or~~ DS Red.
27. **(Currently Amended)** The modular molecular clasp of claim 25, wherein said fluorophore is a fluorescent label selected from ~~the group consisting of~~: Alexa Fluor 350, Alexa Fluor 488, Alexa Fluor 532, Alexa Fluor 546, Alexa Fluor 568, Alexa Fluor 594, Alexa Fluor 633, Alexa Fluor 660 and Alexa Fluor 680, AMCA, AMCA-S, BODIPY FL, BODIPY R6G, BODIPY TMR, BODIPY TR, BODIPY 530/550, BODIPY 558/568, BODIPY 564/570, BODIPY 576/589, BODIPY 581/591, BODIPY 630/650, BODIPY 650/665, Carboxyrhodamine 6G, carboxy-X-rhodamine (ROX), Cascade Blue, Cascade Yellow Cy3, Cy5, Cy3.5, Cy5 Dansyl, Dapoxyl, Dialkylaminocoumarin, 4',5'-Dichloro2',7'-dimethoxy-fluorescein, DM-NERF, Eosin, Erythrosin, Fluorescein, FAM, Hydroxycoumarin, IRD40, IRD 700, IRD 800, JOE, Lissamine rhodamine B, Marina Blue, Methoxycoumarin, Naphtliofluorescein, Oregon Green 488, Oregon Green 500, Oregon Green 514, Pacific Blue, PyMPO, Pyrene, Rhodamine 6G, Rhodamine Green,

Rhodamine Red, Rhodol Green, 2',4',5',7'-Tetra-bromosulfone-fluorescein, Tetramethyl-rhodamine (TMR), Carboxy-tetramethylrhodamine (TAMRA), Texas Red, Texas Red-X, squaraine dye Sq635, ~~and~~ or squaraine dye Sq660.

28. **(Original)** The modular molecular clasp of claim 25, wherein said effector comprises a fluorophore that supports Fluorescence Resonance Energy Transfer.
29. **(Original)** The modular molecular clasp of claim 25, wherein said effector comprises a fluorophore that supports fluorescence quenching.
30. **(Original)** The modular molecular clasp of claim 25, wherein said effector comprises a fluorophore and a bioluminescent protein, the combined use of which supports Bioluminescence Resonance Energy Transfer.
31. **(Original)** The modular molecular clasp of claim 25, wherein said effector comprises complementary enzyme fragments that exhibit reduced catalytic activity when spaced apart and increased catalytic activity when disposed together.
32. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein said molecular recognition element is ~~derived~~ from a naturally occurring polypeptide.
33. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein said molecular recognition element is ~~an artificial~~ a non-naturally occurring (artificial) polypeptide.
34. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein said molecular recognition element is selected from the group of molecular recognition element superfamilies consisting of single chain antibodies (scFv), single domain antibodies (VHH), lipocalins, single chain T cell receptors and single chain MHC molecules.
35. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein said molecular recognition element is selected from the group consisting of molecular recognition element superfamilies consisting of ~~anticalins~~TM ANTICALINTM, ~~affibodies~~TM AFFIBODYTM, and ~~trinectin~~TM TRINECTINTM.

36. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein said molecular recognition element comprises a VH chain specific for a ligand of interest, or a portion thereof.
37. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein said molecular recognition element comprises a VL chain specific for a ligand of interest, or a portion thereof.
38. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein molecular recognition element comprises about 1-220 amino acid residues.
39. **(Currently Amended)** The modular molecular clasp of ~~claim 1~~ claim 2, wherein molecular recognition element comprises about 1-150 amino acid residues.
40. **(Currently Amended)** The modular molecular clasp of ~~any one of claims 1, 2, 3, 4, 5, or 6~~ claim 2, farther comprising a fusion partner domain.
41. **(Original)** The modular molecular clasp of claim 40, wherein said fusion partner domain is a targeting sequence which localizes said modular molecular clasp to an intracellular compartment.
42. **(Original)** The modular molecular clasp of claim 40, wherein said fusion partner domain is a targeting sequence which localizes said modular molecular clasp to a cellular membrane.
43. **(Original)** The modular molecular clasp of claim 40, wherein said fusion partner domain is suitable for immobilizing said modular molecular clasp on a solid surface.
44. **(Original)** The modular molecular clasp of claim 40, wherein said fusion partner domain facilitates purification or isolation of said modular molecular clasp.
45. **(Original)** The modular molecular clasp of claim 40, wherein said fusion partner domain is capable of modifying the solubility of the modular molecular clasp.
- 46-69. **(Canceled)**.